

The entire damage is conservatively estimated at \$250,000.

The storm was severest at Alton, but was very heavy along the river, particularly on the east side, from slightly above Alton to a short distance below St. Louis. In St. Louis rain fell from 2.32 a. m. to 4.52 a. m.; the total amount was 3.16 inches, of which 2.95 inches fell in one hour. This is the heaviest rainfall for one hour ever recorded in St. Louis. The nearest approach to it was in 1873, when 2.93 inches fell in one hour on June 9.

The weather chart prepared on observations made at 7 a. m., July 14, showed gradually increasing pressure from a depression over the Rocky Mountain slope (with its center near Winnipeg, Manitoba) to a wave of high pressure over the Atlantic seaboard; in the 24 hours just ended there had been no rain in the Mississippi Valley except over the limited territory covered by the storm just described.

SEVERE THUNDER STORM AT MINNEAPOLIS, MINN., JULY 12, 1912.

By MARTIN R. HOVDE, Assistant Observer.

Late in the afternoon of July 12, 1912, an unusually severe thunderstorm passed over Minneapolis. Excepting the tornadic disturbance of August, 1904, the storm was the most terrific the city had ever experienced. The morning weather map revealed an area of low pressure extending from the Canadian Province of Manitoba southward to Mexico with its center over eastern South Dakota and Nebraska. It foreboded unsettled weather and showers for eastern Minnesota. The day opened with light to fresh southeasterly and southerly winds, and occasional showers. By midday the temperature began to rise rapidly and the sky became generally clear. The barometer was falling slowly. Shortly before 4 p. m. the sky clouded rapidly in the west and southwest, and the thunderstorm and darkness approached. At 4.35 p. m. the rain began to fall at an excessive rate coincident with the sudden, outrushing squall. At 4.36 p. m. the extreme wind velocity was 90 miles an hour and for a five-minute period, 80 miles. Backing winds indicated a passage to the south of station. After a short interval (about 20 minutes) excessive rain set in again, 0.7 inch being recorded in 15 minutes. Before the hour had passed another storm was passing, winds now veering to southwest. An extreme velocity of 60 miles an hour was recorded at 6.07 p. m. The suddenness and severity of the winds may be inferred when one considers that the total wind movement for the hour of 4 to 5 and 6 to 7 p. m. were but 23 and 6 miles, respectively.

The total damage is conservatively estimated at \$25,000, confined principally to erosion of streets, blowing away of awnings, signs, etc., breakage of trees and windows, and flooding of low places and basements. Three lives were lost and a score of people were injured.

In a storm of this nature many curious and interesting experiences happen. A few are given, taken from the local press:

J. H. Rose saw the wind lift Leonard Gripp's garage from its foundation next door and carry the building 50 feet away. The automobile was left on the floor unharmed.

Fire Chief Ringer had to open the auto doors to let the rain water out of the machine while motoring to a fire.

Assistant Fire Chief Hamilton's auto was submerged in the street while responding to an alarm.

A strong gust of wind seized a delivery wagon and rolling the horse and wagon over and over carried the outfit across the street and dumped it down a steep incline into a ditch.

WISCONSIN RIVER FLOOD, JULY, 1912.

By JAMES H. SPENCE, Local Forecaster, Dubuque, Iowa.

The Wisconsin River flood from Rothschild to Merrill on the 23d and 24th of July, 1912, was one of the worst, if not the worst, on record for that section of the country. Conservative estimates place the loss at more than one-half million dollars. Torrential rains fell on the 23d immediately north and northeast of Wausau. At Merrill, Lincoln County, 11.25 inches was recorded. Only an inch fell at Grand Rapids, and 1.16 inches at Rhineland, while Wausau reports 4.50 inches; Prentice, 5.09 inches; Koepenick, 3.20 inches; and Antigo, 6.03 inches.

It was the great rainfall in Lincoln County that caused the flood. The result of the enormous downpour at Merrill is thus described in the Grand Rapids, Wis., Reporter, by Hon. Neal Brown, of Wausau:

A wall of water came down the river, taking out one dam after another. At Brokaw they didn't even have time to open the gates.

Mr. Brown further states in the Reporter that the flood loss is several hundred thousand dollars, and that among the dams carried out were the Wisconsin River Dam at Merrill; the Prairie River Dam of the Merrill Paper Co.; the Brokaw dam; the guard-lock Dam at Wausau; a small dam of the Wausau Street Railroad Co.; a part of the Brooks & Ross Dam at Schofield; while the cofferdam of the Marathon Paper Mills at Rothschild was blown out to relieve the pressure. Four bridges at Wausau and one at Schofield were carried out in whole or in part. Several million feet of logs between Wausau and Merrill were carried downstream, but a large amount was recovered. (See also Mr. Brown's letter at the close of this report.)

In an account of the flood the Wausau Record-Herald of July 24, 1912, says:

The "Old Wisconsin" went on a tear last night and continued the work of devastation to-day. The heavy and constant rainfall of 24 hours resulted in an extraordinary high stage of water last night, and about 10 o'clock the dam at Brokaw gave way, being unable to stand the strain. A telephone alarm was at once sent to this city, but before precautionary measures could be taken the crest of the flood was here. The water rose to an unusual height, said to be greater than for years.

As a matter of fact, the water at Wausau rose to 15.3 feet, or the highest ever known there by nearly 2 feet. It was about 1.8 feet higher than in September, 1881; about 4.1 feet higher than in September, 1900; and 4 feet higher than in October, 1911. The rise was from 3.6 feet at 7 a. m. of the 23d to 15.3 feet at about 10.30 a. m. of the 24th, or 11.7 feet in 27½ hours.

Mr. A. W. Trevill, postmaster at Wausau, reports as follows relative to the flood:

WAUSAU, WIS., July 30, 1912.

Information here given was obtained from the parties sustaining the loss, and is, I think, a fair estimate:

Barker & Stewart Lumber Co.....	\$20,000
J. Mortenson Lumber Co.....	25,000
Wausau Street R. R. Co.....	20,000
A. Kickbusch Grocery Co.....	3,000
The Northern Milling Co.....	1,500
Badger Turpentine Co.....	3,000
B. Heineman Lumber Co.....	5,000
Brokaw Paper Co.....	30,000
Marathon Paper Co.....	30,000
John Manser Saw Mill.....	10,000
Brooks & Ross Lumber Co.....	10,000
City of Wausau.....	35,000
Chicago, Milwaukee & St. Paul R. R.....	20,000
Chicago & Northwestern R. R.....	20,000
Total.....	232,500